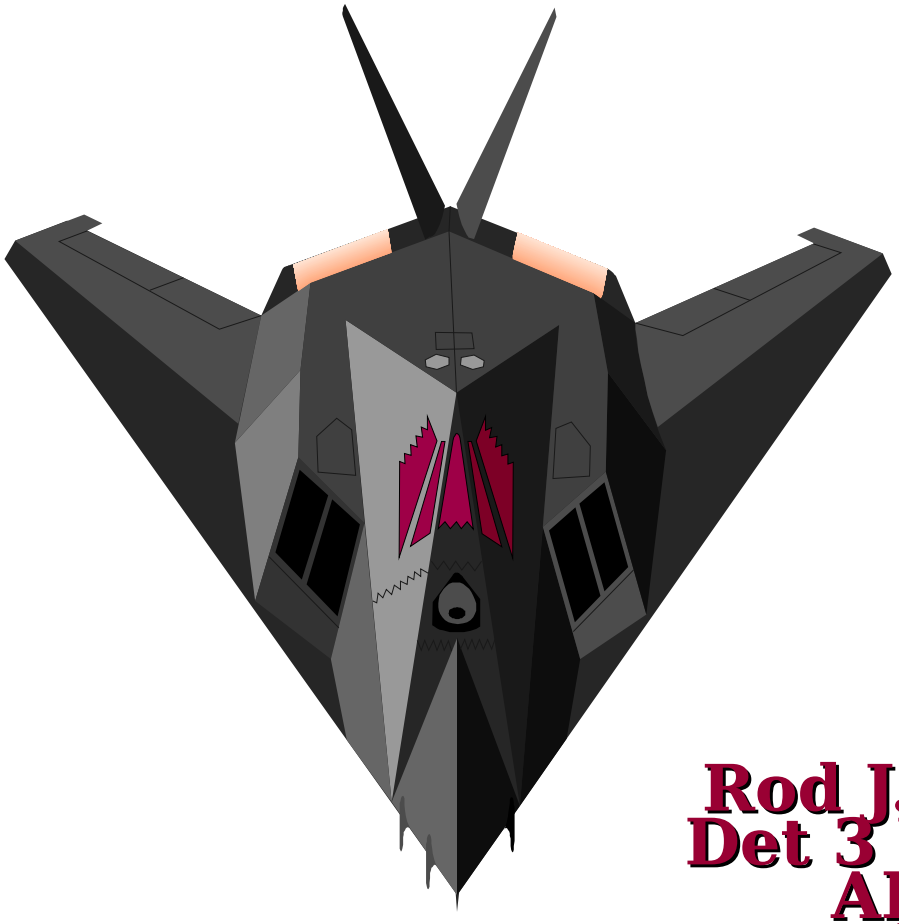
INTO-PLANE CONTRACTS



Rod J. Fischer
Det 3 WR-ALC, AFPET
March - 2001

OVERVIEW

- ✓ **Into-Plane Contracting Concept**
- ✓ **Performance & Quality Requirements**
- ✓ **Problem Areas and Incidents**
- ✓ **Into-Plane Sample Result Trends**
- ✓ **Labs Performing Testing**
- ✓ **MIL-STD-1548 Waivers Considered**
- ✓ **MIL-STD-1548“D”**

INTO-PLANE CONTRACTING CONCEPT

- ✓ Reduction of military bases
- ✓ Economical refueling at commercial airports
  - Into-plane transactions are 40-60% less expensive than aircard or Form 315
- ✓ Jet A/Jet A-1 with & without additives
- ✓ 488 Into-Plane contracts

INTO-PLANE REQUIREMENTS

- **MIL-STD-1548**

  " Into-Plane Servicing of Fuels at Commercial Airports"

  (*E*stablishes minimum performance and quality requirements for fuel services @ commercial airports)

  Validated via QA visits and Risk Assessments

- **ATA 103**

  "Standards for Jet Fuel Quality Control at Airports"

  (Developed by Air Transport Association to cover *minimum* standards at airports)

INTO-PLANE REQUIREMENTS

- ✓ **IATA GUIDANCE - *"Fuel Quality Control and Fueling Service Guidance Material"* (International Air Transport Association is also currently working towards publishing the JIG's into-plan guidance under an IATA cover)**
- ✓ **JIG's - Joint Inspection Group *"Joint Into-Plane Fueling Services"***
- ✓ **United Airlines Fuel Operation & Maint. Manuals**

AVIATION FUEL

	JP-8	JET A-1	JET A
FLASH F	100	100	100
FREEZE F	-53	-53	-40
FLAMM F	100-170	100-170	100-170
LBS/GAL	6.7	6.7	6.7
VAPOR P	NIL	NIL	NIL
AROM %	25	22 - 25	22 - 25
BTU/GAL	124500	124500	124500

PROBLEM AREAS

- **Additive Blending**
  - Inadequate injection
  - Injector's not properly calibrated
  - Cocktail mixture
- **Quality Assurance**
  - Jet A/A-1 not procured to 260C JFTOT
  - Sample failures
  - Late sample submissions

INCIDENTS

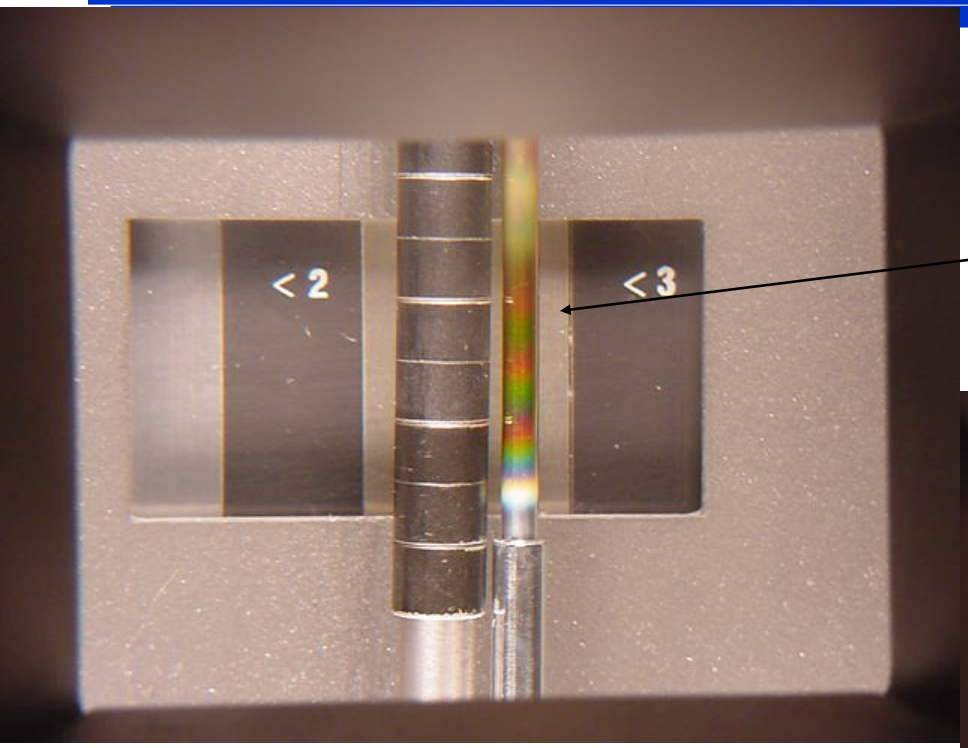
- ✓ **C-21 Flame Out - Near Accident**
  - Aircraft serviced with fuel/water mixture
    - AF Safety Office issued request that all ITP sites be inspected
    - Led to major 1548 revision w/emphasis on sampling & surveillance
      - Resulted in restoring customer confidence in fuel quality
- ✓ **Qtrly Sample Failed - FSII Off-Scale (>0.25 %)**
  - Bulk tank & refuelers affected

INCIDENTS

- ✓ **Qtrly Sample Prior to Air Show Failed**
  - **Failed JFTOT & FSII (initial and retest)**
  - Contractor replaced Jet A inventory
    - Discovered fuel was being procured at 245C vice 260
    - Led to contractor revising fuel release procedures
- ✓ **Grounded Entire F-16 Fleet**
  - **Improper additive injection**

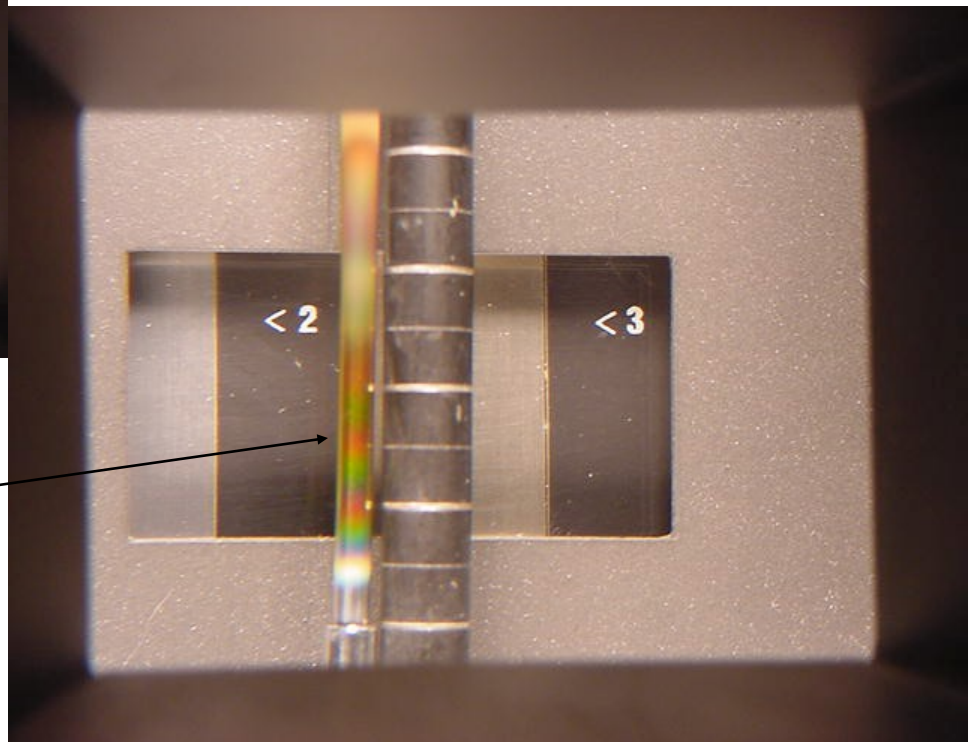
Problems Identified by Program

Sep 00 - ITP JFTOT (CONUS)



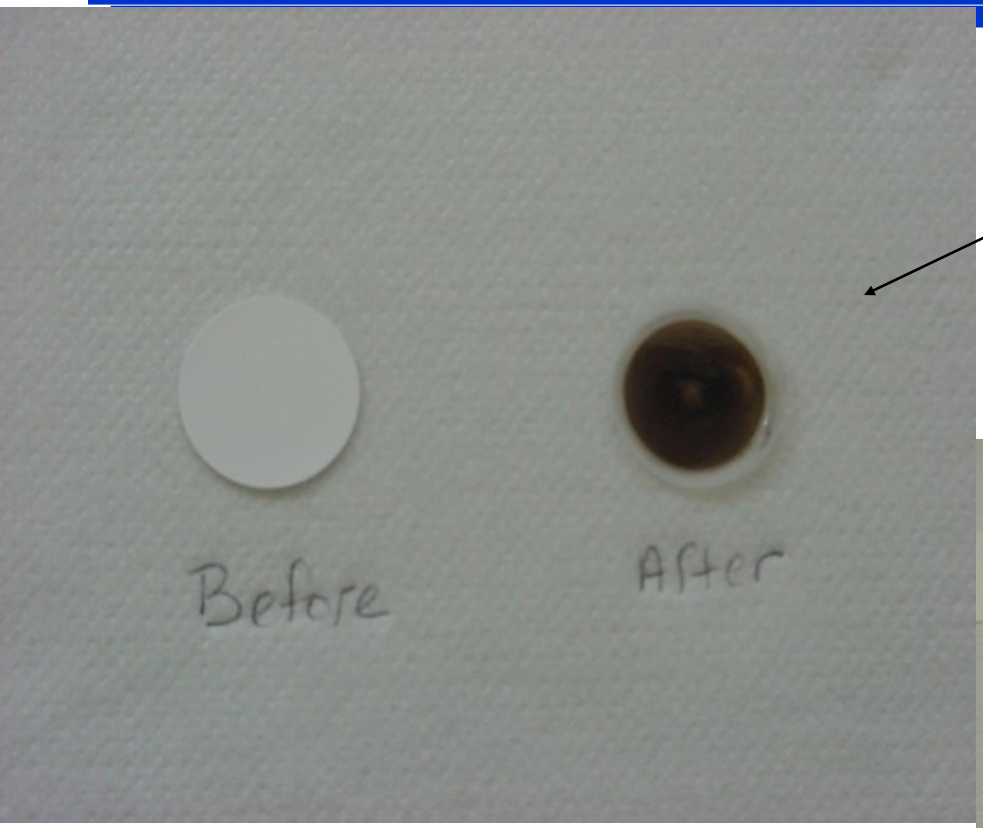
Test #1 TDR - 4P

Test #2 TDR - 4P



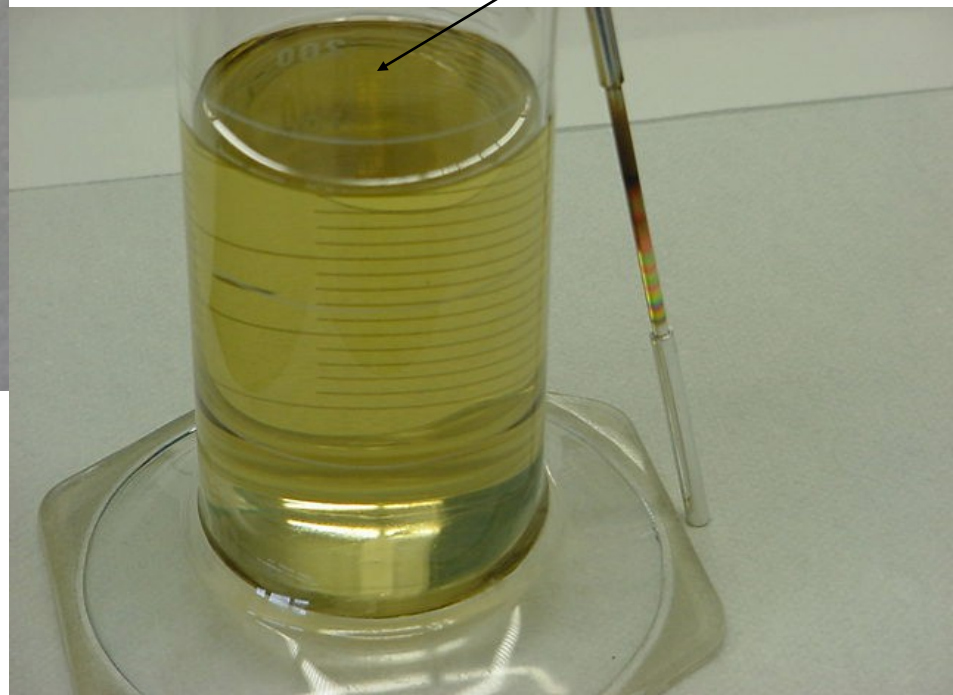
Problems Identified by Program

Sep 00 - ITP JFTOT (CONUS)



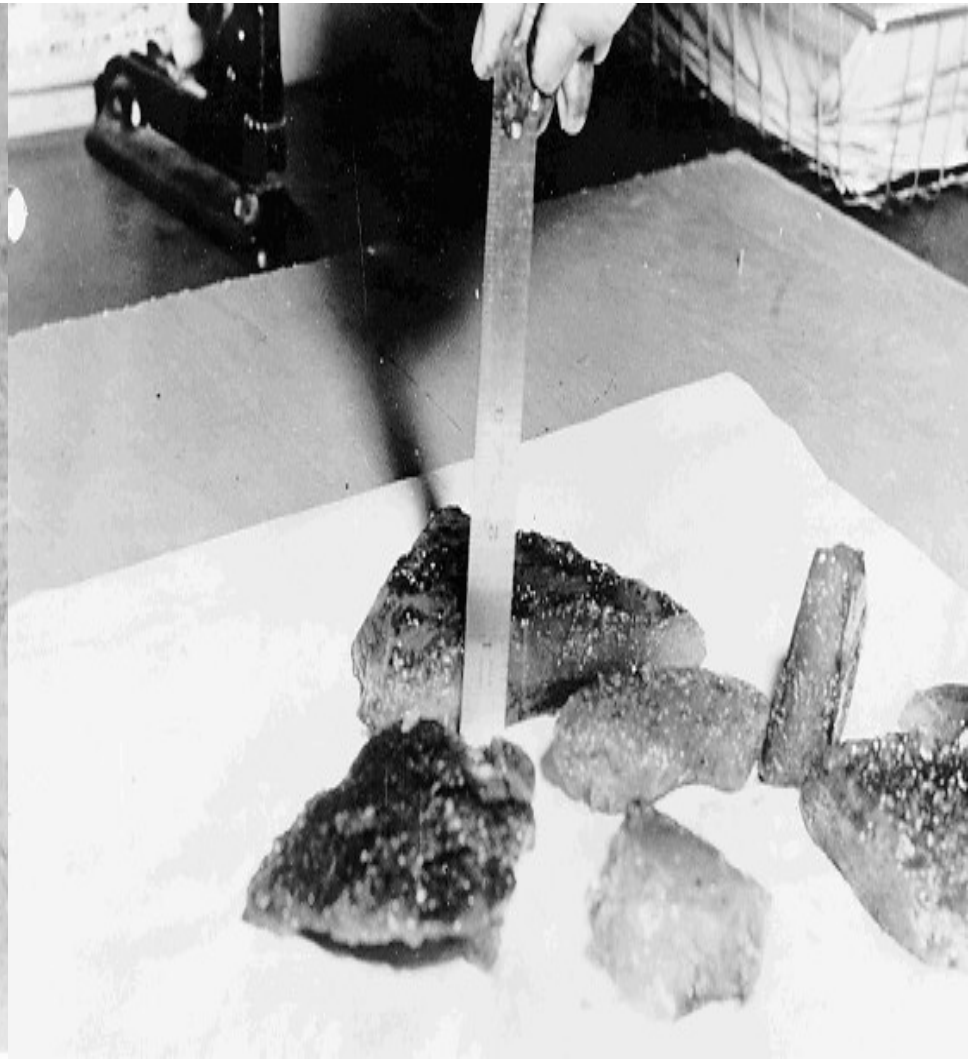
dP - 250

Fuel Color "Green"



Lab Tech Reported "Worse Seen" JFTOT Failure

AIRCRAFT INCIDENT
(WHY FSII?)



MIL-STD-1548 REQUIREMENTS

- **Establishes Minimum Quality & Safety Requirements**
  - Identifies military unique requirements
- **C2 Clause Establishes Quarterly Sampling Requirements**
  - Quarterly samples tested in DoD laboratory
    - Some OCONUS sites waived to allow in-country testing

MIL-STD-1548 SAMPLE SUBMISSIONS

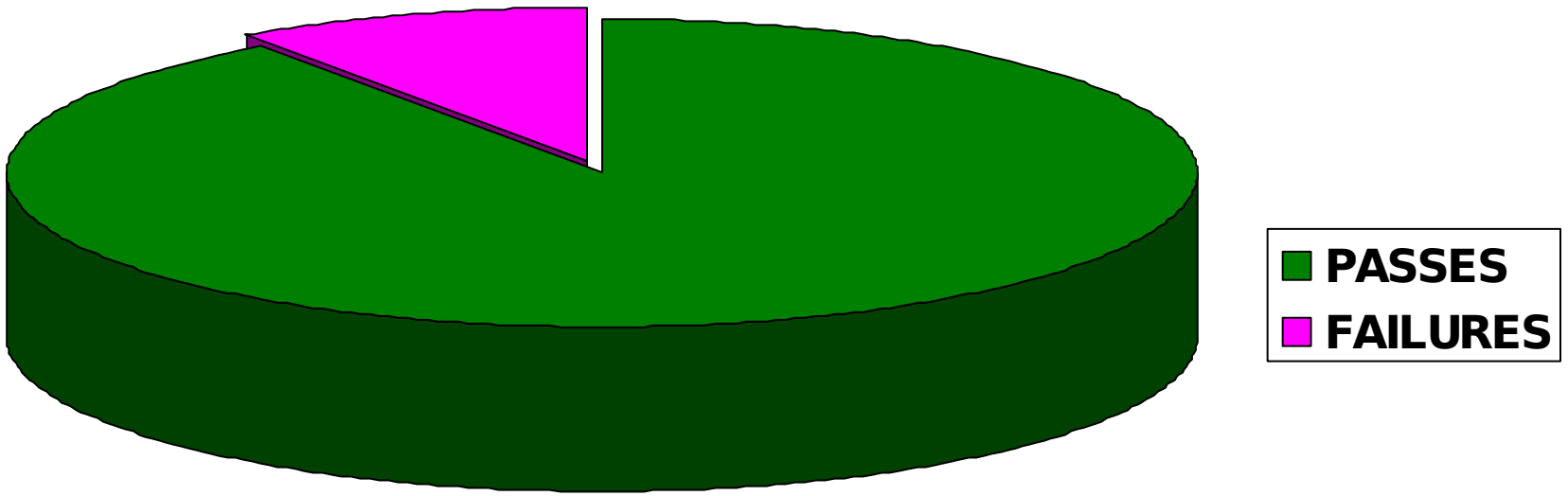
- **Sample Taken Downstream From A/C Servicing Unit Every 90 days**
  - Tested for

JFTOT
Flash Pt
Freeze Pt
FSII (if w/FSII)
BOCLE (optional)

INTO-PLANE CONTRACT DATA BASE

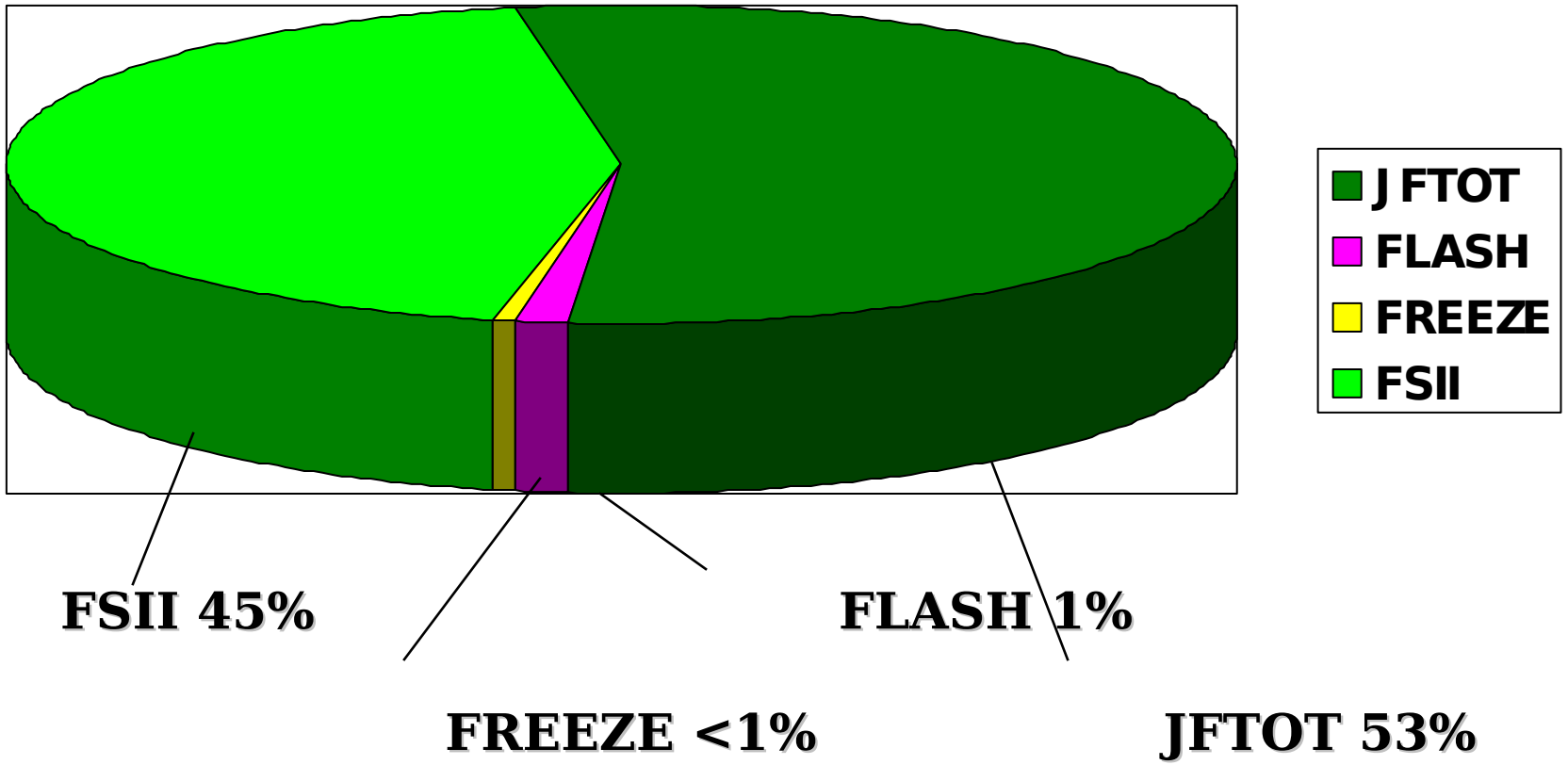
- **Database Contains 8,922 ITP Sample Results**
  - Used to evaluate quality trends & to give electronic access to results
    - Real time lab results now available at AFPET web site "https://AFPET.LACKLAND.AF.MIL/SFT/" & clicking on view into-plane lab reports--must come in from a dot.mil to have access
- **Lab Reports From Worldwide DoD Labs**
  - Includes reports from non-DoD labs
- **Quality Trend Data Compiled From Jan 94 - Feb 01**
- **BOCLE Results From Feb 96 - Feb 01**

WORLDWIDE RESULTS
"ITP QUARTERLY SAMPLES"

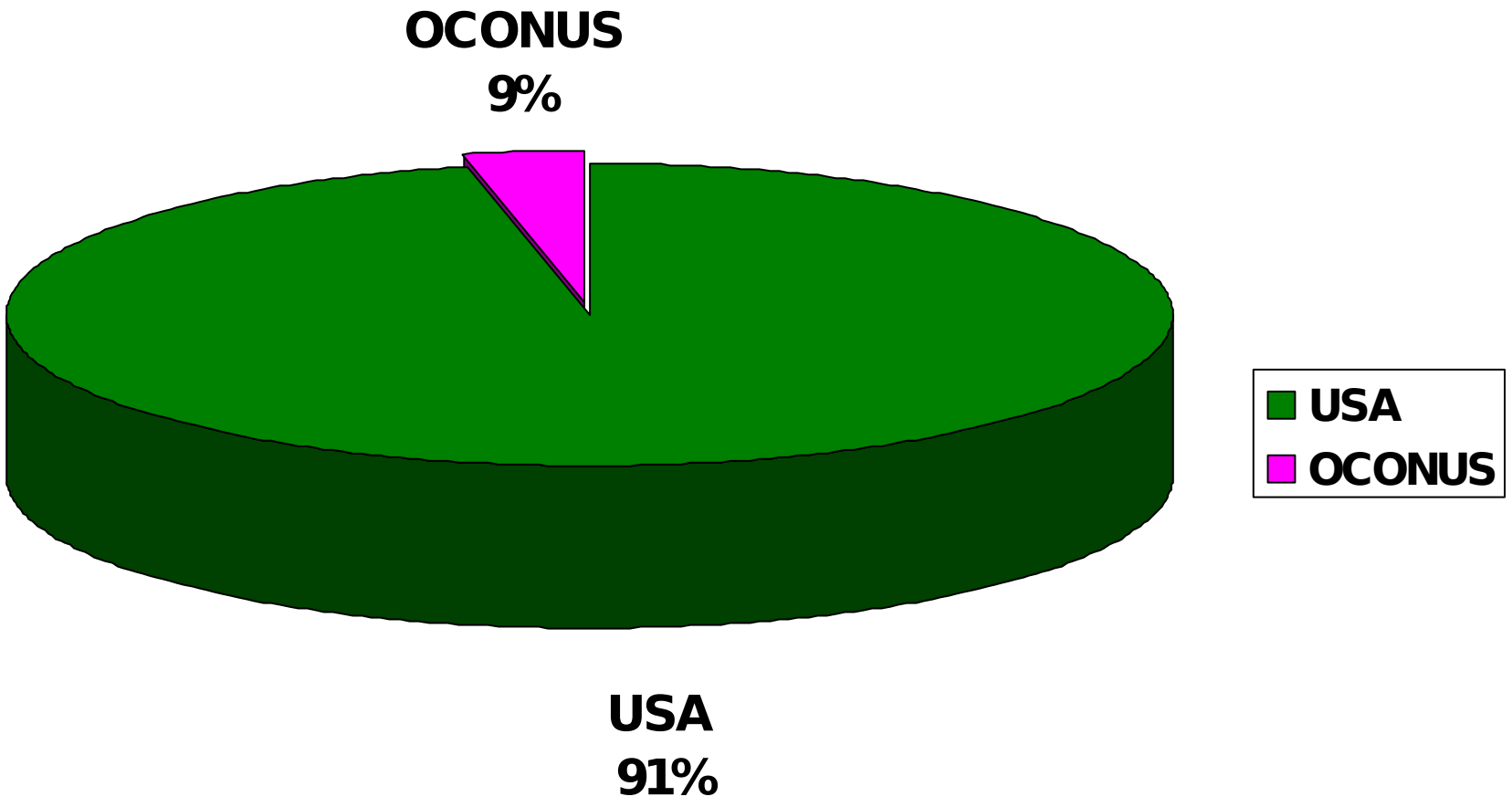


* Failures do not include BOCLE results as BOCLE is report only test

WORLDWIDE FAILURE POOL



WORLDWIDE RESULTS "ORIGIN OF FAILURES"



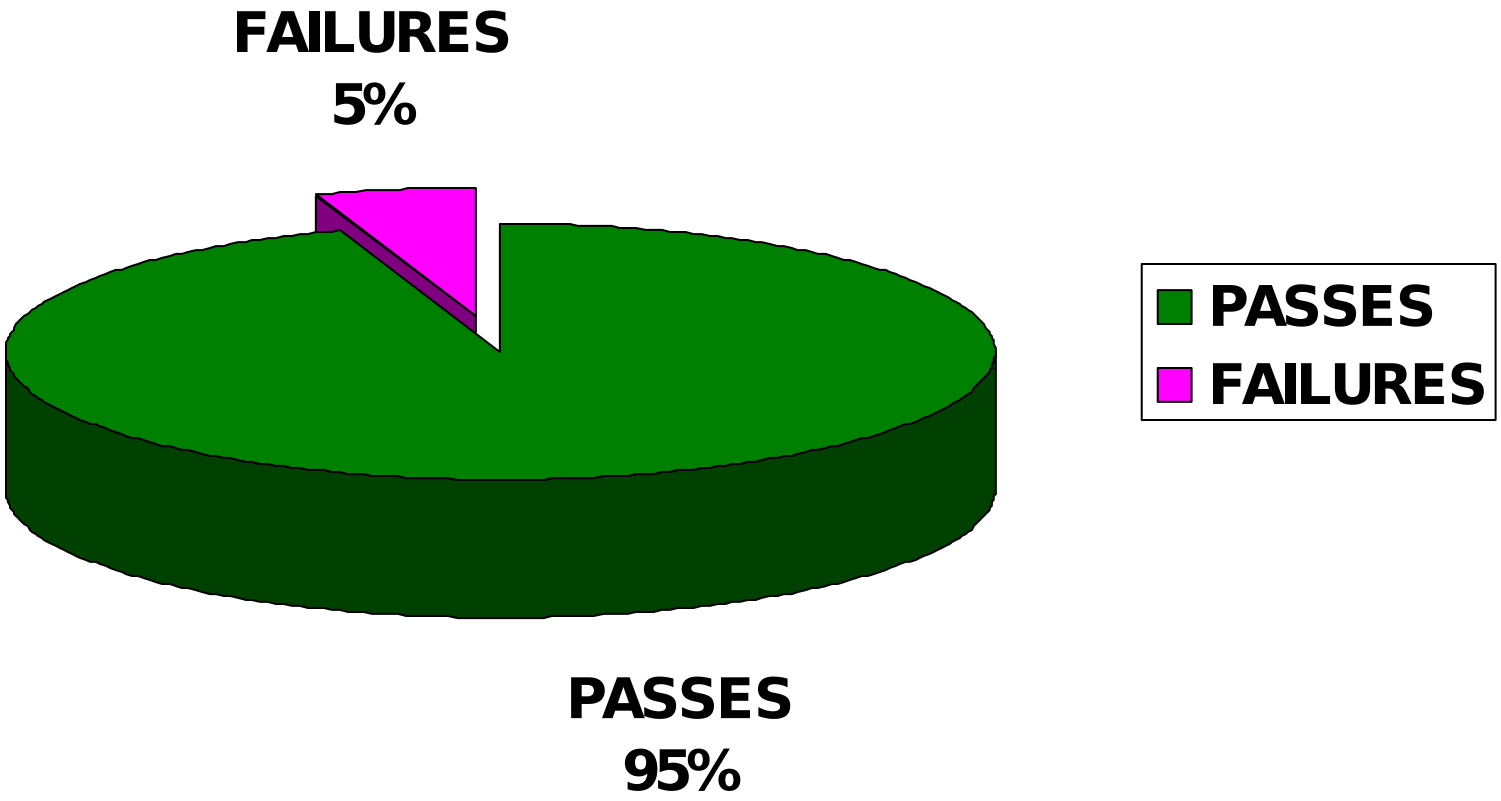
JFTOT PARAMETERS

- ✓ **Samples Submitted in Epoxy Lined Sample Cans**
- ✓ **JET A/JET A-1 - ASTM 1655**

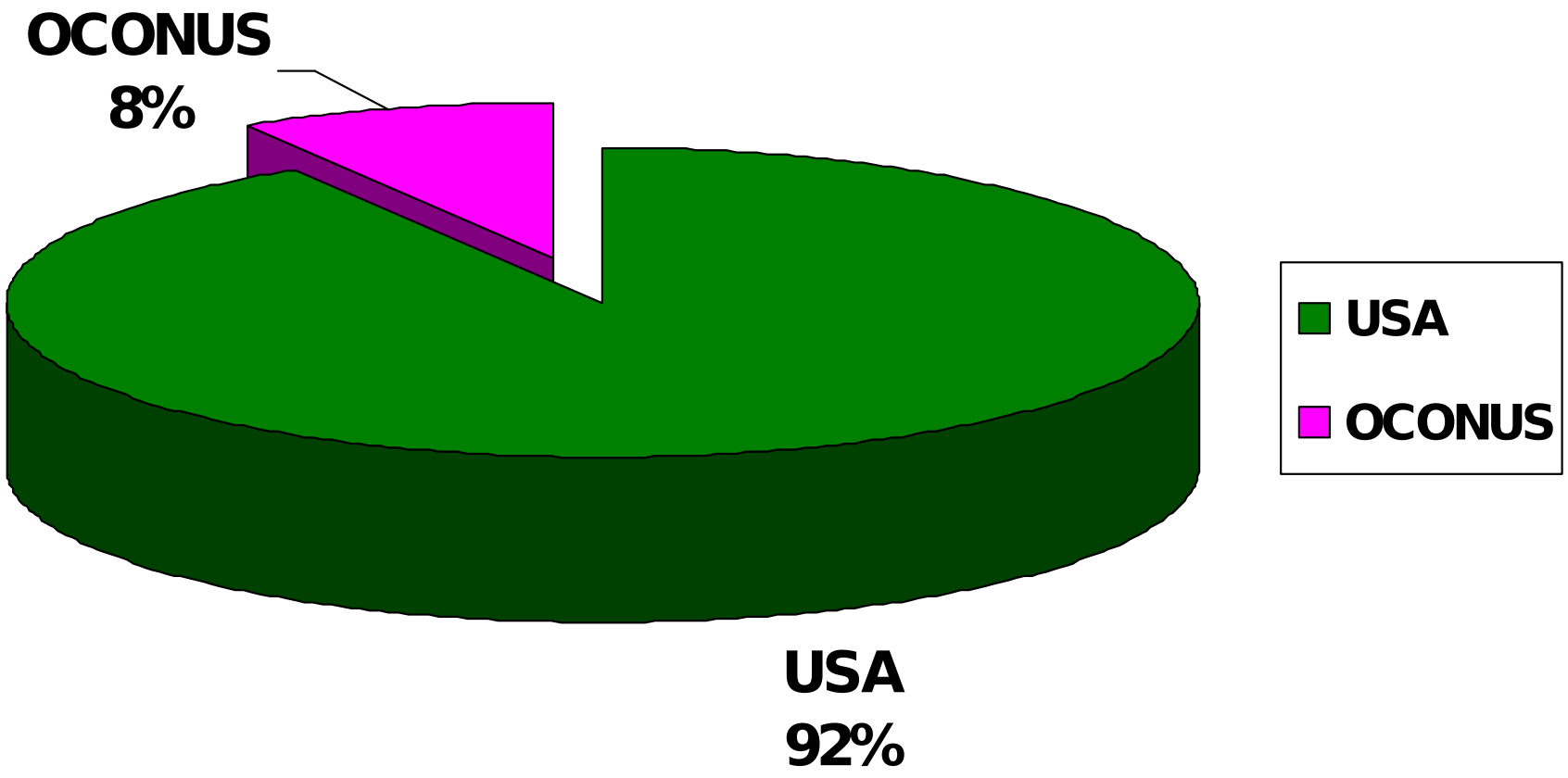
  Test allows 260C - 245C
- ✓ **MIL-STD-1548 & MIL-T-83133**

  Requires testing at 260C
- ✓ **Random Test Showed That 71% of 260C Failures also Failed at 245C**

JFTOT RESULTS WORLDWIDE



JFTOT FAILURES WORLDWIDE



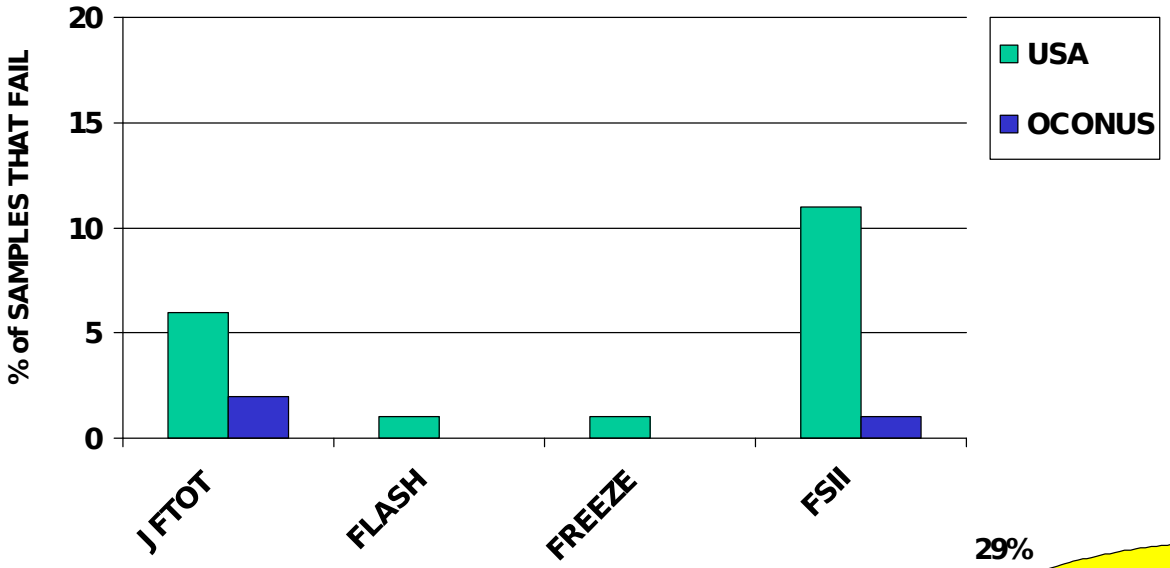
JFTOT FAILURE TRENDS

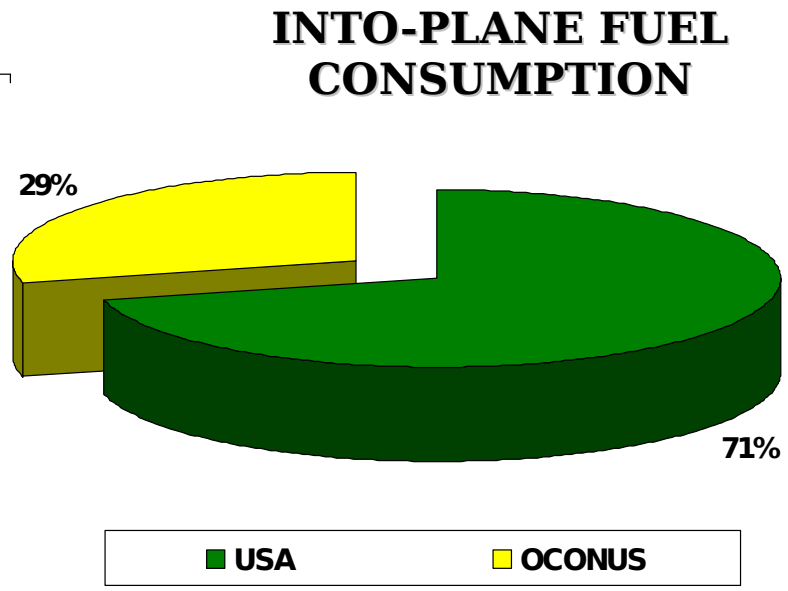
- **JFTOT Fails More Than Any Other ITP "Spec" Test**
- **Sample Containers Often Blamed**
  - Air Base ACS program argues against container blame
    - ACS & ITP test programs mirror each other

- Same Frequency
- Same Container Type
- Same Sample Source
- Same Prep Procedures
- Common Labs
- Both Require 260C

    - ITP failures almost 10 times more frequent than ACS failures
  - Argues that failures are due to fuel quality - not container

ITP SAMPLES FAILURE & CONSUMPTION RATES

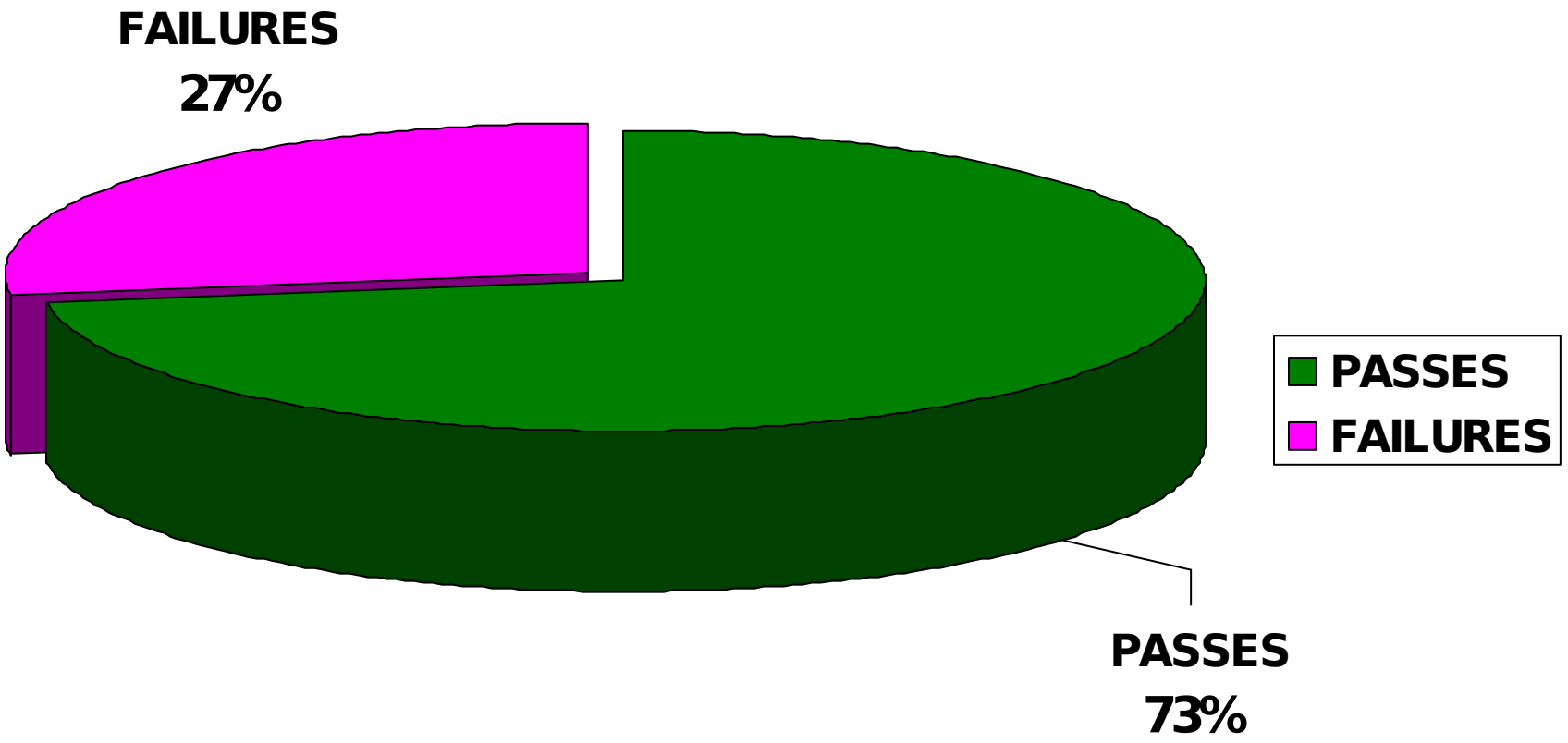




BOCLE TEST PARAMETERS

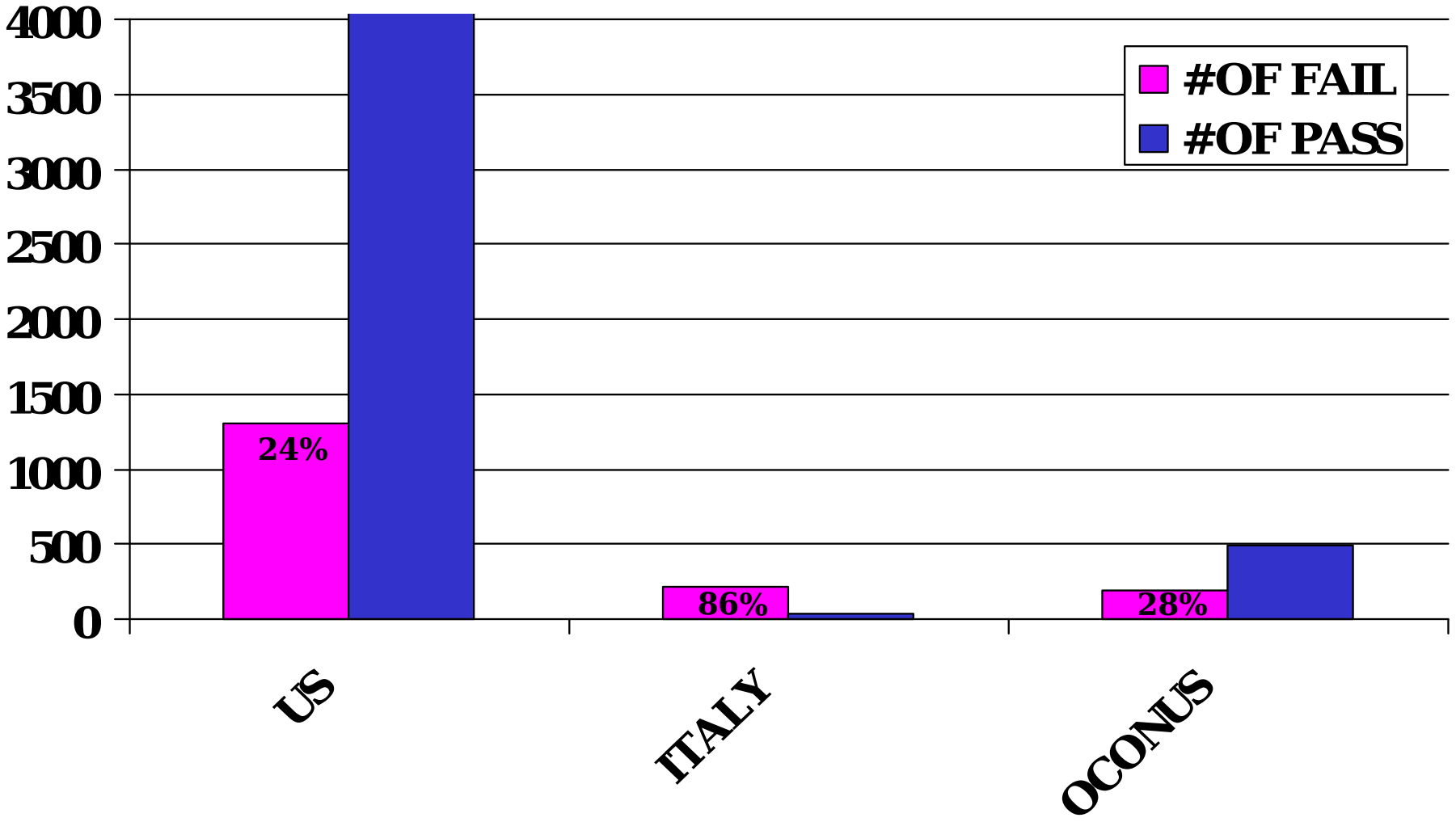
- **Ball On Cylinder Lubricity Evaluator (BOCLE)**
  - BOCLE results are “report only”
  - BOCLE testing solely an AF program test protocol
- **Jet A and Jet A-1 w/o Corrosion Inhibitor**
  - Some a/c limited in flight hours w/o CI
- **>0.65 Wear-Scar Diameter Considered Failure**

BOCLE RESULTS WORLDWIDE

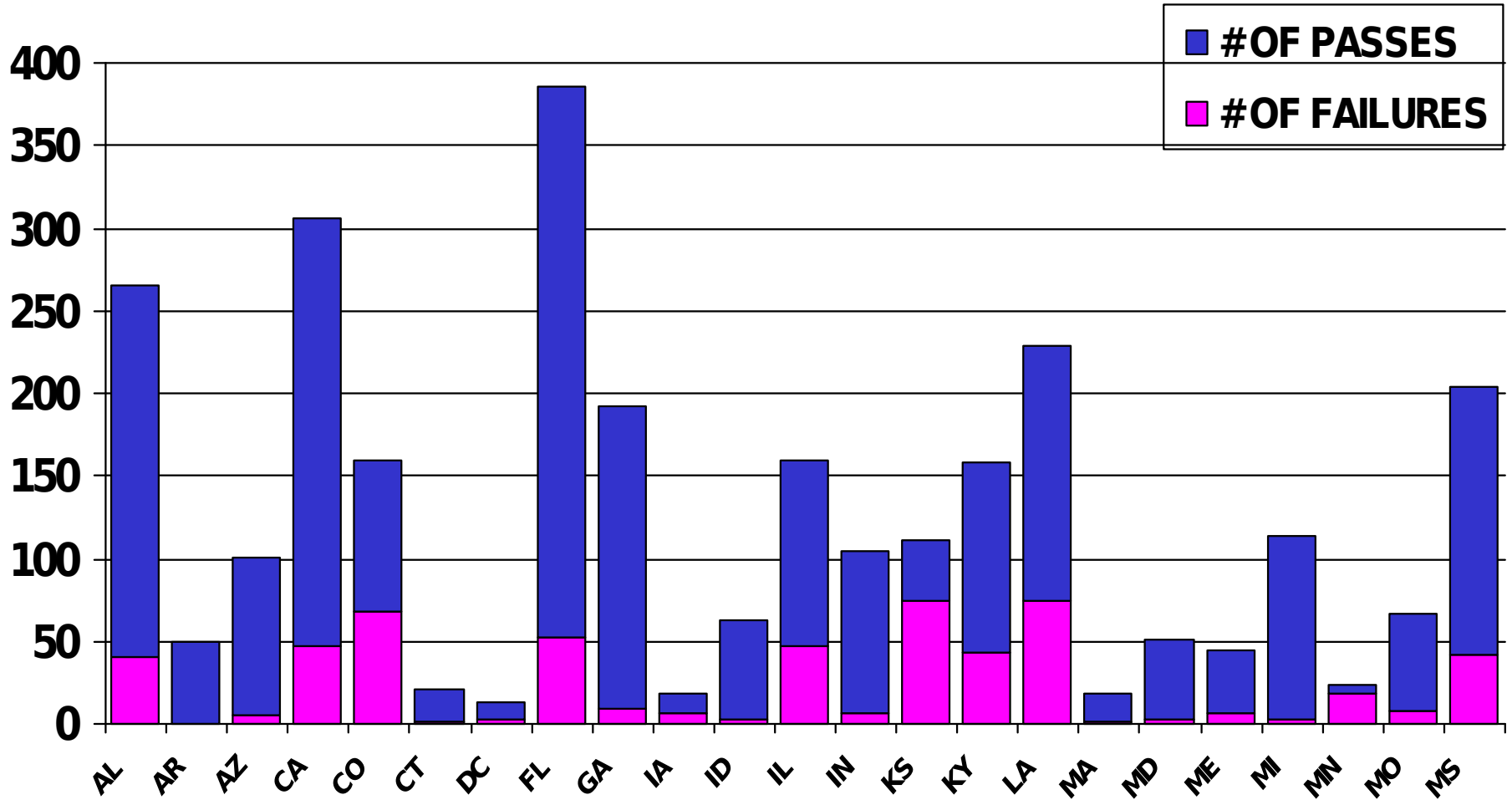


CONUS & OCONUS BOOST RESULTS

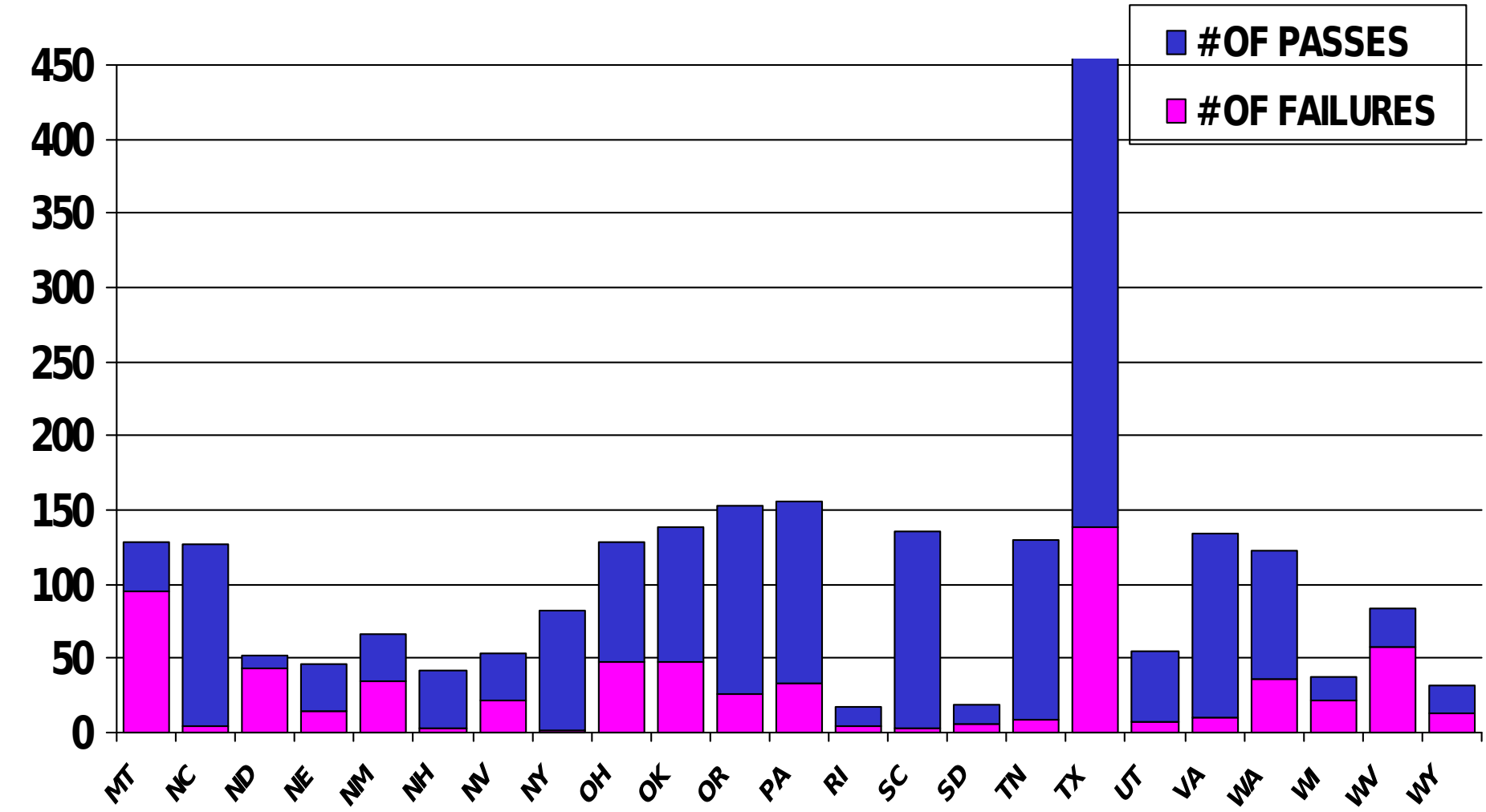
"FEB 96 - MAR 01"



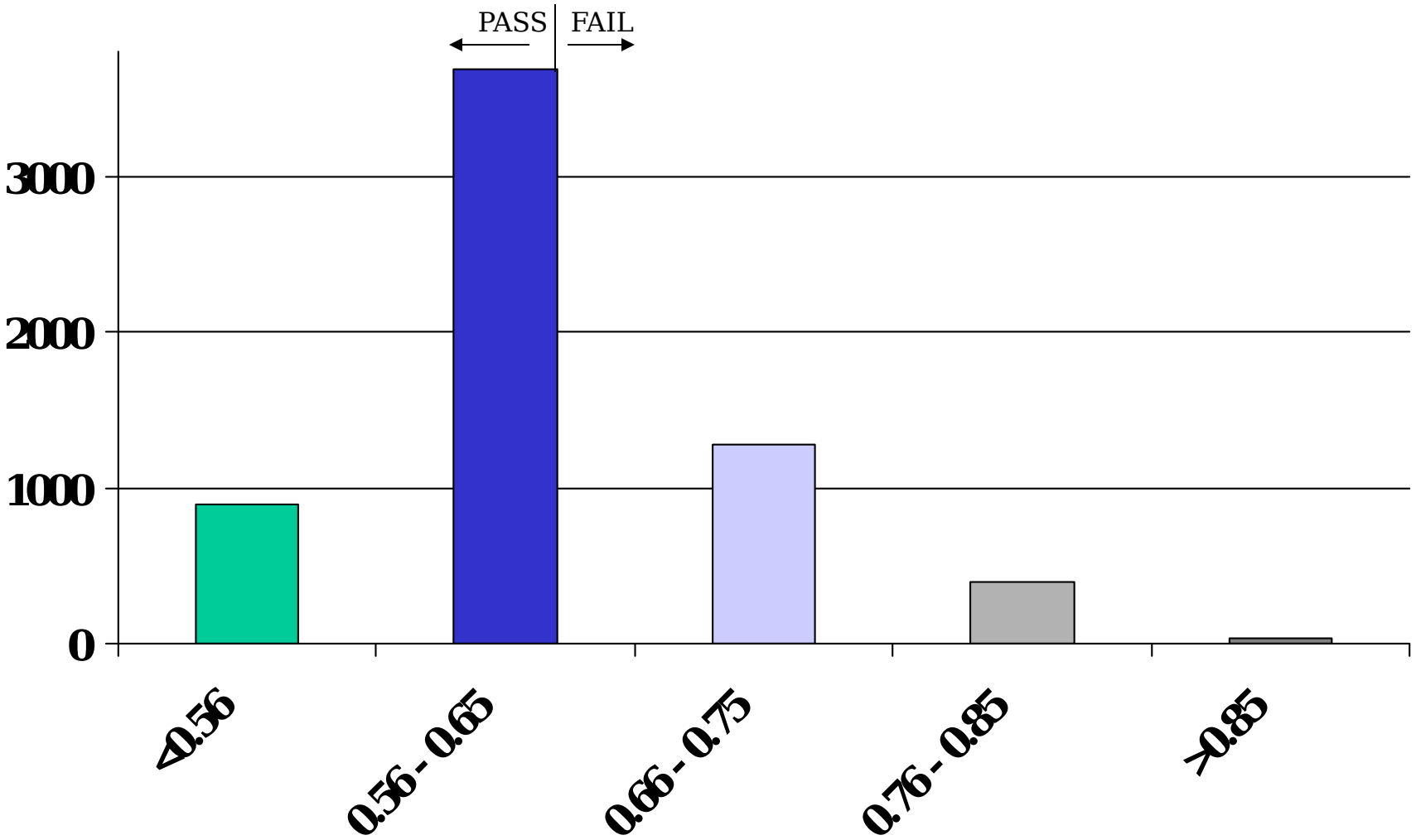
CONUS BOCLE RESULTS



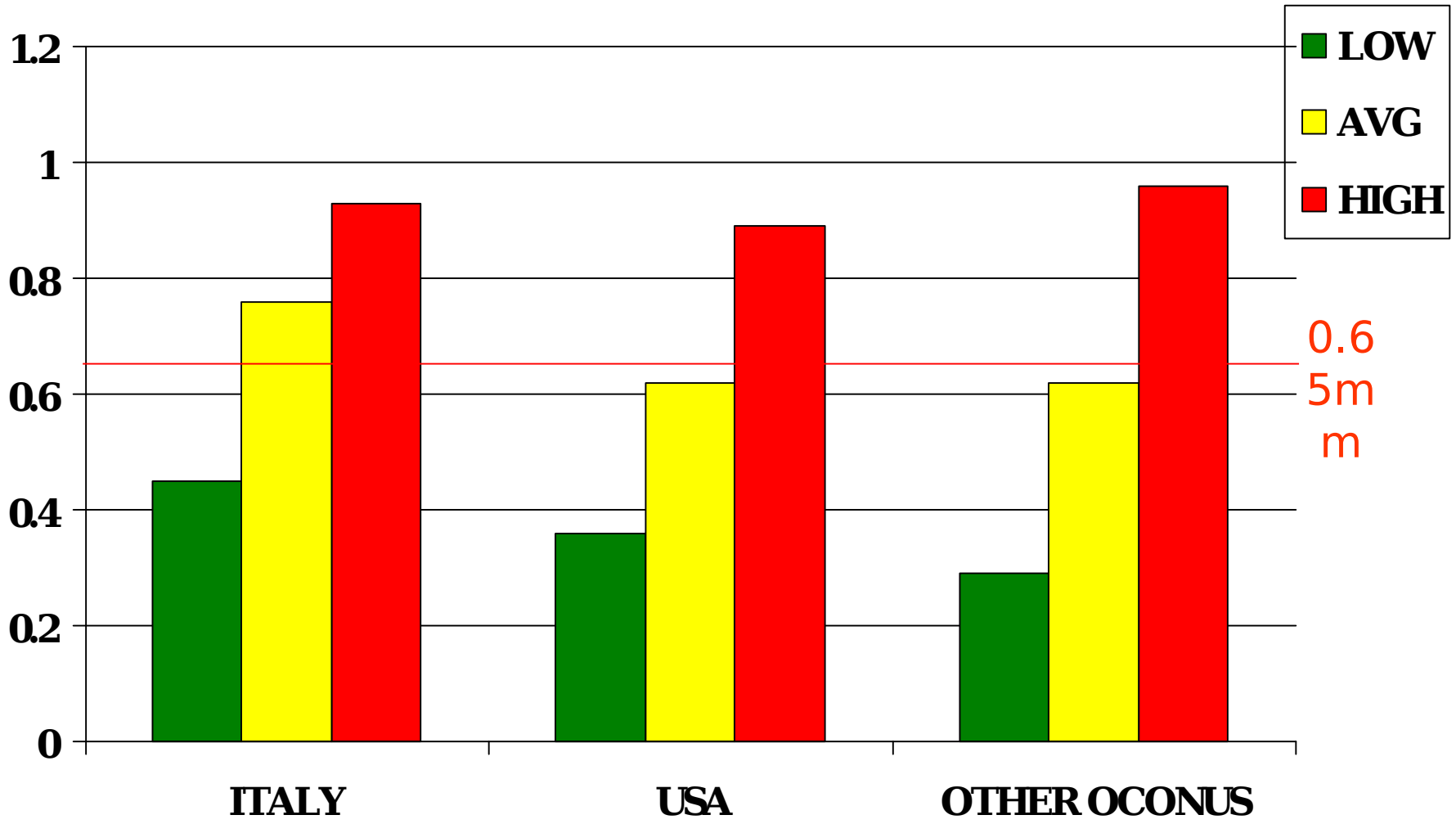
CONUS BOCLE RESULTS (CONT.)



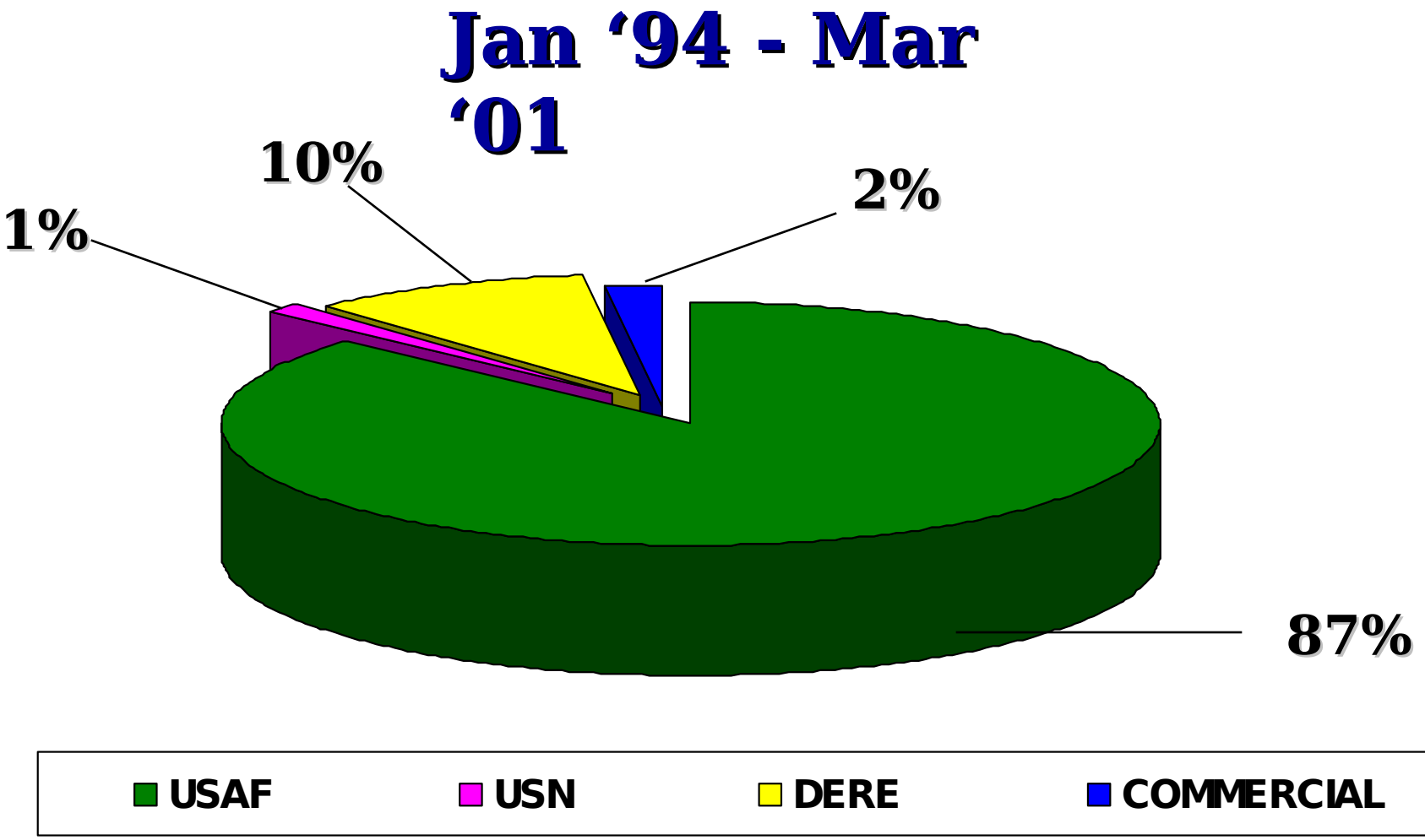
BOCLE RESULT DISTRIBUTION



BOCLE WEAR SCAR DIAMETER

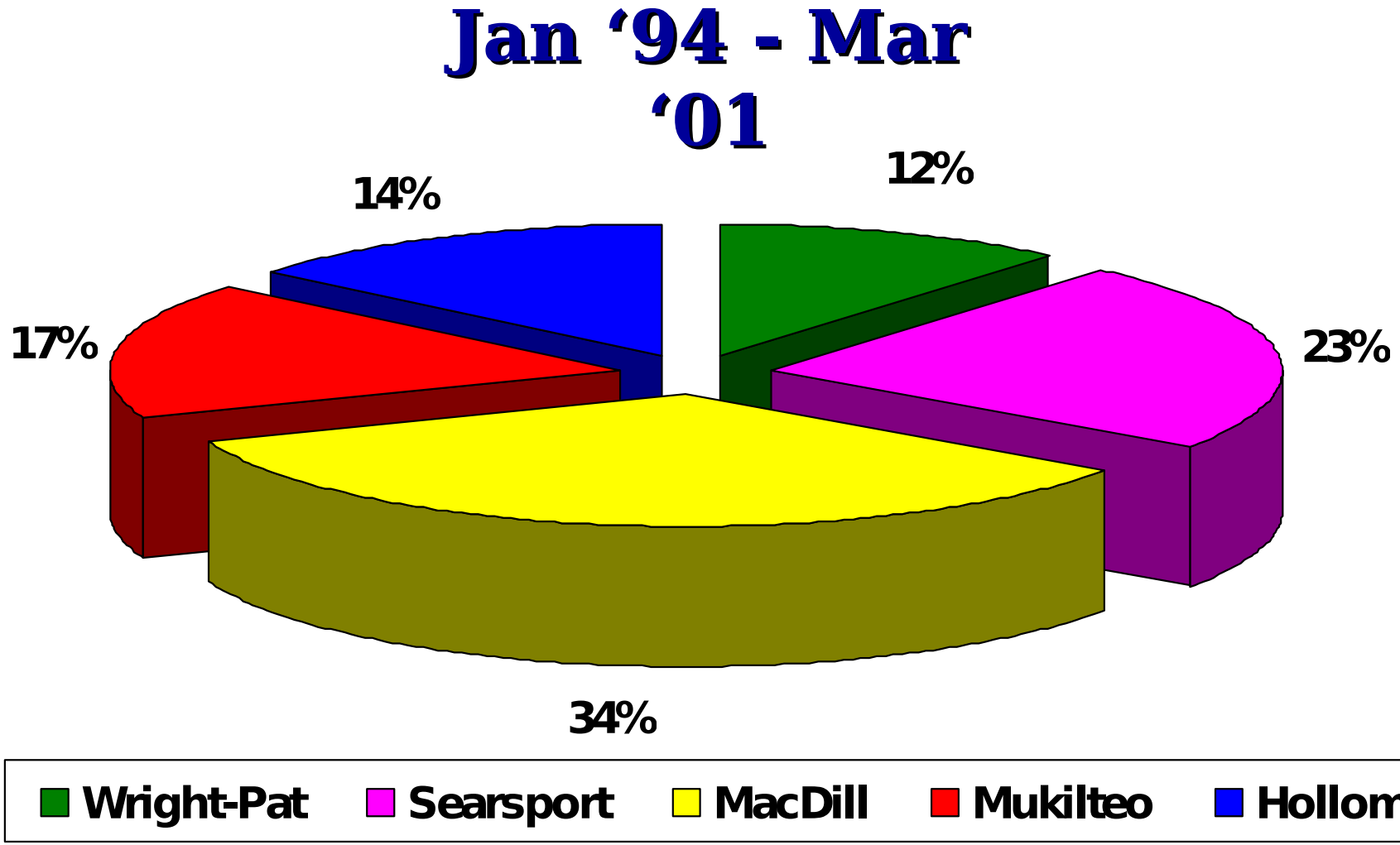


LABS THAT PERFORM ITP TESTING (Worldwide - 8,922 Samples)



LABS THAT PERFORM ITP TESTING

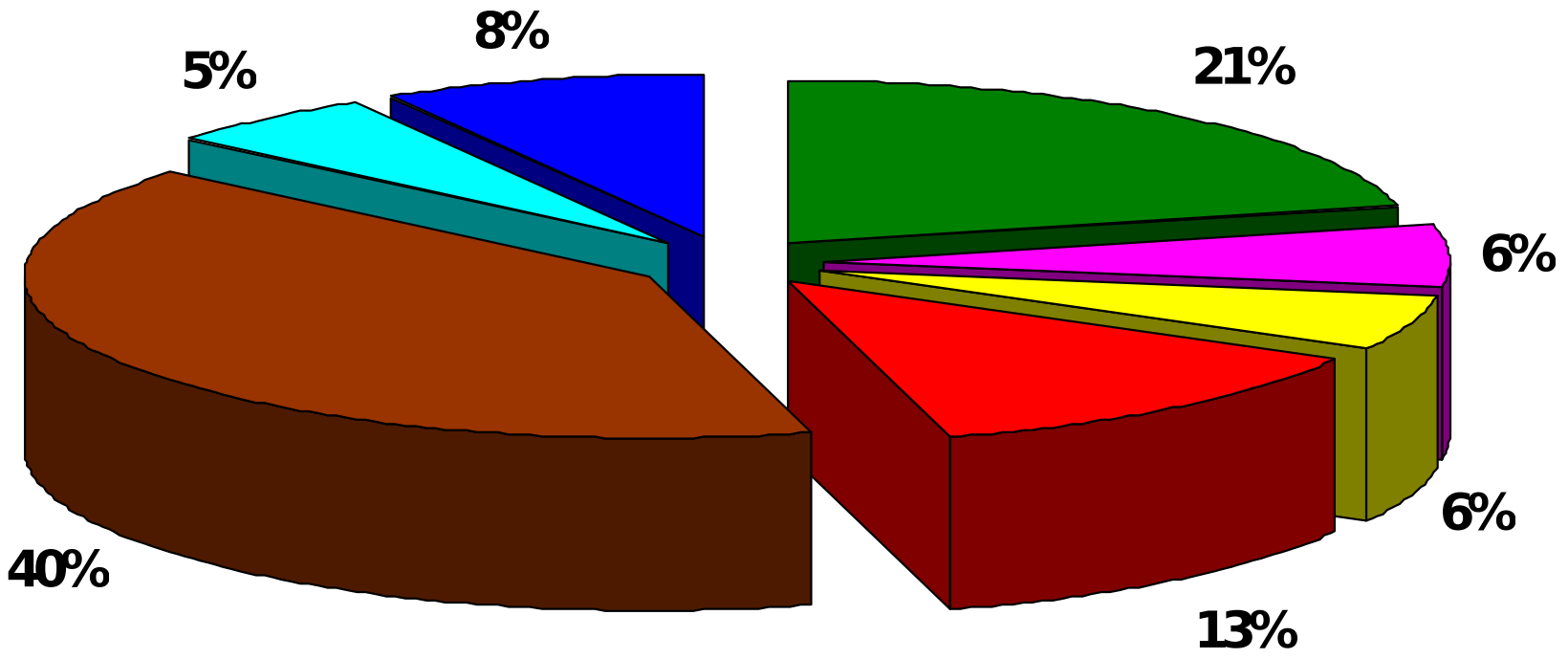
CONUS - 6,766 SAMPLES)



LABS THAT PERFORM ITP TESTING

(OCONUS - 2,156 SAMPLES)

Jan '94 - Mar '01



SAMPLE SUBMISSION TRENDS

- ✓ **27% of BOCLE Results Exceed >0.65 Wear-Scar**
- ✓ **5% of Samples Fail JFTOT @ 260C**
- ✓ **11% of Samples Fail FSII Limits of 0.07 - 0.20**
- ✓ **10% of Quarterly Samples Not Submitted On-Time**
- ✓ **Quarterly Samples Help ID & Solve Problem Areas**

WAIVERS CONSIDERED BY SFTH

- **AFPET Considers About 25 ITP Waivers Annually**
  - 95% of Waivers considered are approved
    - Approve some sites to use the JIG ILO 1548
    - In 20+ cases approved in-country analysis of Qtrly samples
    - Sometimes approve use of robust non-MIL-C ground clamps
- **AFPET Disapproves About 5% of Requests**
  - Recently Rejected request to waive NFPA407 for a commercial practice
  - Have rejected some requests to perform in-country testing
  - Recommended non-approval of request to extending coalescer life from 3 to 5 years on servicing equipment

MIL-STD-1548“D”

- **Final Sent to Press on 31 Mar 00 - Now Available!**
- **Embraces Commercial Specifications**
  - Type I; ITP refueling IAW ATA103
  - Type II; ITP refueling IAW JIG
- **Caveats Commercial Practices w/DoD Unique Needs**
  - Includes warning for handling JP8+100 defuels
  - Addresses grounding clamp hardware & additive injection
  - 1548 does not address QAR visits (TBD via RA’s or QUAL-I)
  - C2 clause identifies quarterly sample submission requirements

SUMMARY

- ✓ Into-Plane Contracting Concept
- ✓ Performance & Quality Requirements
- ✓ Problem Areas and Incidents
- ✓ Into-Plane Sample Result Trends
- ✓ Labs Performing Testing
- ✓ MIL-STD-1548 Waivers Considered
- ✓ MIL-STD-1548“D”

QUESTIONS?